Server Consolidation

Action Required

Recommendation: Engage an independent consultant to (1) inventory existing servers in departments, (2) estimate future server growth, (3) determine the cost and value of consolidating servers, (4) identify consolidation risks, and (5) identify the type of consolidation that would be appropriate for the State of California.

Executive Summary

This narrative provides a brief overview of distributed computing and the challenges that it presents to the state. By consolidating these types of computers, the state may receive a number of benefits such as reduced costs, improved data security, and increased reliability. Before attempting such an effort, however, we recommend that the Technology Services Board (TSB) commission a study to examine the costs and benefits of server consolidation in the state.

Distributed Computing and Its Challenges

Distributed Computing. Microprocessor based computers are most commonly known for their desktop features. These types of computers have also evolved into servers that perform important functions in departments such as managing email, maintaining Internet connectivity, storing data bases, and allowing for the sharing of printers and FAX machines. Throughout the 1980s and 1990s, organizations used the power of these low-cost microprocessors to migrate away from mainframe computers to what is now known as distributed computing. These types of servers can found throughout most organizations. For example, some estimates indicate that California state government alone owns over 15,000 distributed servers.

Distributed Computers Have Support Challenges. Along with the growth of these servers, a number of problems have also arisen with this type of technology. For example, problems related to data security and privacy, server reliability and availability, and the ongoing support costs can be found in most organizations and departments. Also, some departments restrict their servers be “program specific” which then limits the ability of the department to fully utilize the server’s full capacity.

Server Consolidation May Solve Some Challenges … But More Information is Needed

Consolidation May Solve Some of These Support Challenges. As a result of these problems, a majority of large organizations, both public and private, are considering some degree of server consolidation. There are many benefits of server consolidation

such as reduced hardware and software costs, increased server reliability and availability, and improved data security and recovery. Depending on how server consolidation is approached, some of these benefits, however, may take several years to realize and would likely require a significant effort by the state.

Different Approaches to Server Consolidation. There are several different approaches to server consolidation models that may provide some answers to server consolidation in the state. Gartner Research defines the most widely accepted models of server consolidation to be:

- *Logical consolidation*, or remote administration, involves implementing common processes and systems management across multiple environments and does not require the physical relocation of the hardware.

- *Physical consolidation*, or location consolidation, entails the co-location of multiple servers at fewer locations.

- *Rationalized consolidation* involves implementing multiple systems on fewer, more powerful computer servers.

- *Partitioning*, also known as *virtualization,* occurs when multiple operating systems share the same computer server.

In addition, Gartner Research suggests some implementation strategies for these models such as *forward consolidation*, where only new projects or refresh efforts are consolidated or *backward consolidation,* where existing systems are modified to operate in a consolidated environment.

Recommend A Study to Determine Approaches and Benefits of Server Consolidation. Server consolidation is probably achievable and would likely provide some benefits to the state. In our view, however, additional information is still needed before the state can develop a statewide approach and strategy to server consolidation. For example, much is still unknown as to how many servers could be reasonably consolidated. In addition, it is not clear what savings could actually be achieved from server consolidation, and then if savings is available, what is the best approach at achieving those savings. For these reasons, we recommend that TSB commission a study of server consolidation. We estimate this study would cost about $400,000, and could be funded through existing DTS expenditure authority. Further, we suggest that the State CIO office provide sponsorship for this study effort. The scope of the study would include:

- An inventory of existing servers in the state.
- An estimate of the future server growth in the state.

- Costs and values of consolidating servers.
- Risks associated with server consolidation.
- Identification of the type of consolidation that would be appropriate for the state.